Electronic Version
Stylesheet Version v1.1.1

Claims

[c1] 1. A spindle motor comprising:

a shaft;

a unilaterally open-ended cylindrical bearing member having a bearing hole into which said shaft is inserted and a closed-end surface axially opposing the inserted-end face of said shaft;

a rotor that rotates together with said shaft and has a circular flat face extending radially outward from the circumferential surface of said shaft;

a series of bearing clearances filled with oil, formed in between said bearing member, said shaft, and the flat face of said rotor;

a thrust bearing section provided with dynamic-pressure-generating grooves contoured to impart on the oil pressure acting radially inward during rotation of said rotor, and formed in between the end face along the open end of said bearing member and the flat face of said rotor;

a radial bearing section provided with dynamic-pressure-generating grooves contoured to impart on the oil pressure acting inward from either end axially during rotation of said rotor, and formed in between the inner pe-

ripheral surface of said bearing hole and the circumferential surface of said shaft;

a communicating passage formed in said bearing member so that one end of said communicating passage opens on said thrust bearing section radially inwardly therein and so that either axial end of a one of said bearing clearances being formed in between the inner peripheral surface of said bearing hole and the circumferential surface of said shaft communicate through said passage, for balancing pressure within said bearing clearances; and

an annular protruding portion being formed on at least one of the end face of the bearing member and the flat face of the rotor at radially inward portion of the thrust bearing section.

[c2] 2. A spindle motor as set forth in claim 1, wherein the annular protruding portion is formed on at least one of the end face of the bearing member.

[c3] 3. A spindle motor as set forth in claim 1, wherein the annular protruding portion is formed on the flat face of the rotor.

[c4] 4. A spindle motor as set forth in claim 1, wherein an annular bump is formed on the end face of the bearing member at radially outward portion thereof and the dy-

namic-pressure-generating grooves of the thrust bearing section are disposed on the surface of the bump, the bump has an inclined configuration such that an inter-surface dimension of a gap formed in between the flat face of the rotor and the inclined face of the bump contracts in the direction toward the shaft so as to be radially inward edge portion of the bump closer to the flat face of the rotor.

[c5] 5. A disk drive in which is mounted a disk-shaped recording medium onto which information is recordable, the disk drive including a housing; a spindle motor fixed within said housing, for spinning the recording medium; and an information accessing means for writing information into and reading information from requisite locations on said recording medium; the disk drive characterized in that said spindle motor comprises:
a shaft;
a unilaterally open-ended cylindrical bearing member having a bearing hole into which said shaft is inserted and a closed-end surface axially opposing the inserted-end face of said shaft;
a rotor that rotates together with said shaft and has a circular flat face extending radially outward from the circumferential surface of said shaft;
a series of bearing clearances filled with oil, formed in

between said bearing member, said shaft, and the flat face of said rotor;

a thrust bearing section provided with dynamic-pressure-generating grooves contoured to impart on the oil pressure acting radially inward during rotation of said rotor, and formed in between the end face along the open end of said bearing member and the flat face of said rotor;

a radial bearing section provided with dynamic-pressure-generating grooves contoured to impart on the oil pressure acting inward from either end axially during rotation of said rotor, and formed in between the inner peripheral surface of said bearing hole and the circumferential surface of said shaft; and

a communicating passage formed in said bearing member so that one end of said communicating passage opens on said thrust bearing section radially inwardly therein and so that either axial end of a one of said bearing clearances being formed in between the inner peripheral surface of said bearing hole and the circumferential surface of said shaft communicate through said passage, for balancing pressure within said bearing clearances; and

an annular protruding portion being formed on at least one of the end face of the bearing member and the flat face of the rotor at radially inward portion of the thrust

bearing section.

[c6] 6. A disk drive as set forth in claim 1, wherein the annular protruding portion is formed on at least one of the end face of the bearing member.

[c7] 7. A disk drive as set forth in claim 1, wherein the annular protruding portion is formed on the flat face of the rotor.

[c8] 8. A disk drive as set forth in claim 1, wherein an annular bump is formed on the end face of the bearing member at radially outward portion thereof and the dynamic-pressure-generating grooves of the thrust bearing section are disposed on the surface of the bump, the bump has an inclined configuration such that an inter-surface dimension of a gap formed in between the flat face of the rotor and the inclined face of the bump contracts in the direction toward the shaft so as to be radially inward edge portion of the bump closer to the flat face of the rotor.